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14. ABSTRACT

Representatives from the National Institute of Standards and Technology (NIST) requested that the AFRL Fire Research Group prepare a non-technical brief of current areas of research and development at AFRL/MLQD to be presented at NIST's Annual Fire Conference, 4-6 April 2007. The presentation outlines the major areas of research at the AFRL Fire Research Facility at Tyndall Air Force Base, Florida in 2007. The presentation was previously released to the public as part of the post-conference notes and can be viewed at http://www.bfrl.nist.gov/info/fireconf/AFC2007/presentations/presentations.htm.

15. SUBJECT TERMS

halon suppression, composite materials, ultra high pressure, UHP, ARFF, closed cell foam, pilot extraction tool

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AFRL Fire Research

NIST Annual Fire Conference

Gaithersburg, MD

4-5 April 2007

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DoD/Air Force Fire Research Group
Air Force Research Laboratory
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AFRL Fire Research

- MISSION:
  - Conduct exploratory and advanced research in fire fighting and rescue technologies and develop improved suppression/mitigation agents, specialized equipment, and techniques to counter new and evolving fire threats to DoD assets.

Areas of Interest

- Materials Fire Hazard Research
  - Alternative to Halon suppression system that will extend range of safe operations aircraft equipped with airborne laser.
- Characterization of Fire Properties of Composite Materials
  - Burn through testing.
  - Cone calorimetry.
  - Determining off-gassing products and mechanism of ignition for aircraft composites.

Areas of Interest

- Advanced Fire Fighting Agent Research
  - Combination of computer modeling/simulation and laboratory tests to invent/discover fire fighting agents that are more effective and less damaging to the environment.

Areas of Interest

- Ultra High Pressure
  - Water or Foam Spray at ≥ 1200 psi.
    - Current emphasis on increasing throw distance.
  - Retrofit P-19 trucks with UHP system.
    - USAF set to modify five P-19s.

Areas of Interest

- Advanced Deployable Fire Fighting System
  - Working with commercial truck manufacturers to develop an Aircraft Rescue and Fire Fighting (ARFF) Vehicle capable of suppressing large scale liquid hydrocarbon fuel fires.
    - UHP water and AFFF, compressed air foam, and combined agent AFFF-dry chemical systems.
    - Next generation USAF deployable fire truck.
    - Ability to airlift two on C130 (v.s. a single P-19).

Areas of Interest

- Advanced Deployable Fire Fighting System (continued)
  - Also working with commercial manufacturers to build a skid steered, all-terrain vehicle equipped with UHP and other advanced fire and rescue systems.
- Closed Cell Foam Fire Protection
  - Develop fire-retardant closed cell foam of lightweight, low-volume materials for protecting aircraft shelters, tents, and other expedient shelters in remote expeditionary locations.

Areas of Interest

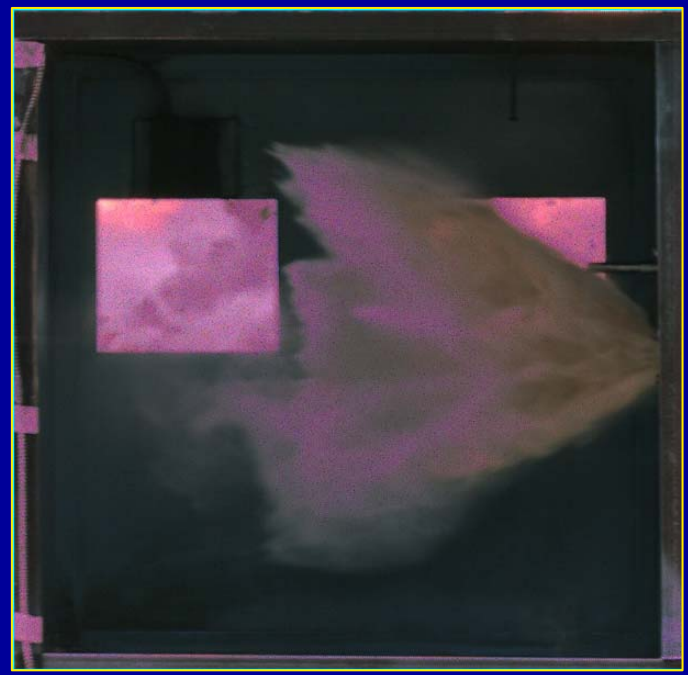
- Support to FAA
  - Full size instrumented mock-up of a section of the new large aircraft for evaluation of agents, systems, equipment, and vehicles.
  - Evaluation of FAA Striker truck.

Areas of Interest

- Halon 1211 Replacement
  - Provide technical advice and fire fighting effectiveness evaluations of candidate replacement agents for USN/USAF flight line fire extinguishers.

Areas of Interest

- Tactical Vehicle Fire Suppression
  - Burn protection from fuel enhanced improvised explosive devices (IEDs) for personnel in tactical vehicles.



Areas of Interest

- Ultra-High-Speed Fire Suppression
  - Suppression of the the fastest burning materials, like MJU 32/38 magnesium-Teflon pyrotechnic flare material.
    - Advanced Fire Protection Deluge System (AFPDS)
    - Blast Initiated Deluge System (BIDS)

Areas of Interest

- SBIR: Lightweight Durable Intumescent Paint
  - Develop a lightweight, durable intumescent paint for composite aircraft parts that delays ignition and reduces flame spread. *(Texas Research Institute Austin, Inc.)*
- SBIR: Pilot Extraction Tool
  - Design and build a lightweight, portable pilot extraction system for use on the F-22 and other fighter aircraft. *(Quoin International, Inc)*

Areas of Interest

- SBIR: Graphical User Interface (GUI) for Fire Simulation Models
  - Develop a graphical user interface for a range of simulation tools that reduces the expertise and level of effort required to configure and run fire scenarios. *(Reaction Engineering International)*

AFRL Fire Research

- Questions?